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FLASHForward - Future-Oriented Wakefield-Accelerator Research and Development at FLASH

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FLASHForward is a beam-driven plasma wakefield acceleration facility, currently under construction at DESY (Hamburg, Germany), aiming at the stable generation of electron beams of several GeV with small energy spread and emittance.

High-quality 1 GeV-class electron beams from the free-electron laser FLASH will act as the wake driver.

The setup will allow studies on external injection as well as on various internal injection techniques, such as density-downramp or ionisation injection.

With a triangular-shaped drive beam electron energies of up to 5 GeV can be anticipated.

Particle-In-Cell simulations are used to assess the feasibility of each technique and to predict properties of the accelerated electron bunches.

In this contribution the physics case and the current status of FLASHForward will be reviewed.

Concepts of the main components - the extraction beamline from the FLASH linac, the target area, the plasma cell and the post-plasma beam transport and diagnostics - will be described.

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